CHAPTER II

CREATIVITY : ITS THEORETICAL PERSPECTIVES

Creative children are assets to the society. Development and progress in various fields of national life depend on creative children. Creativity is not restricted to the chosen law. All children are creative and its dimensions vary from child to child.

- Ali Imam.

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CHAPTER II

CREATIVITY : ITS THEORETICAL PERSPECTIVES

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CHAPTER II

CREATIVITY : ITS THEORETICAL PERSPECTIVES

2.0 Introduction

Up to the beginning of this century, modern scientists also were under the impression that creativity is a unique gift of God, which is rarely found. They also believed that any change of degree in creativity was not possible. Persons having this natural gift are known as geniuses. For example Albert Einstein, Madam Montessory, Shakespeare and Rabindranath Tagore and all such persons are genuiuses. Their contribution is unique in the fields of science, education and literature respectively. Their work inspired psychologists to analyse and understand the way of thinking adopted by them. As a result of this deep and analytical study, psychologists arrived at the conclusion that the concept of creativity should be considered scientifically rather than religiously. Moreover it is proved now that creativity is a mental ability which can be fluctuated by environments.

Of course human creativity cannot be compared to the creativity of the nature. Here is given an abstract showing eloquent distinction between the creativity of the

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nature and of human creativity by modern thinker R.J. Hallman.

> "It is implied by the most fundamental characteristic of human creativity, namely, the requirement that man works with materials, which he himself has not created. Lacking the Omnipotence and Omniscience of God, man cannot create in the sense of bringing something into being from what previously had no existence".1

These words prove that human creativity is an inspired trait, which is as important as any human quality in changing history and in reshaping the world.

Creativity is a term derived from the word 'create' which means to find out and set something strange and at once useful to bring about a change in the society. Creativity is one type of energy of a man to contribute artistically or scientifically to the society. From this meaning it is obvious that the process of creativity is substantially identical in art or science. This is the fundamental hypothesis for the process of creativity accepted by the psychologist H.A. Simon[2], that the process of creativity is identical.

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2.1 The Concept of Creativity

In long course of its history, the researchers have tried to experiment with life from various angles with expectations to understand it better in terms of imagination, thinking, insight, intuition and spirit which are called or considered to be significant factors of creativity. The phenomenon of creativity is the most significant criterion in psychology as well as education. Though the word 'CREATIVITY' sounds absolutely abstract, its contribution in improving man's health, happiness and social situations is perhaps beyond limit.

Creativity in various fields and faculties like science, technology, literature, sculpture, painting, music, mathematical discoveries etc., later on leads to well-settled and stable set-up of society and civilization. That is why it has been the matter of investigation for the researchers. Different definitions given by different researchers indicate the importance of creativity.

Creativity is a unique gift of nature and it has been as significant as any human quality in changing and reshaping history and the world. Guilford and Maryfield (1960), Getzels and Jackson (1962)[3] pointed out that creativity is an obvious aspect of intellectual functioning.

It is not one ability at all, but a cluster of abilities and potentialities, that influences human activities in almost all shapes and spheres of life. Thus creativity contributes significantly either directly or indirectly to the acquisitions of educational skills and informations.

The concept of creativity involves something novel, useful, relevant, economic, elegant or valuable. As stated by Mednick[4] (1962) "Creative thinking consists of forming new combination of associative elements and this mutual combination of associative elements leads to the emergence of associative process". But the common view points of the researchers consider it an ability akin to intelligence.

According to the well-known historian Arnold Toynbee[5] (1964) "To give a fair chance to potential creativity is a matter of life and death for society, because the outstanding creative ability of a fairly small percentage of the population is mankind's ultimate capital asset .... potential creative ability can be stratified, started and stultified by the prevalence in society of adverse attitudes of mind and behaviour". Toynbee throws light on imagination considering it to be part of creativity saying. "Democracies collapse only when they fail to use intelligent imaginative methods for solving their problems". For example, Greece failed to heed such a warning by Socrates and later on generally collapsed.

The fascinating yet fruitful findings of Torrance[6] declare that creativity is "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements and so on, searching for solutions, making guesses or formulating hypothesis and possibly modifying and retesting them and finally communicating the results". From this statement, it can be concluded that one responds to a problem from a variety of viewpoints.

Just as Torrance and Toynbee stressed sensitive imagination, so as Mednick (1962) emphasized "Creative Thinking". As opined and defined by Indian philosophers; the phenomenon as 'Navanavomeshalini Pragya' - man is creative in his ability to create new forms. This shows that creativity in the form of ability is innate in man.

Dr. Radhakrishnan differs a little and states that, "It is the spirit in man that is responsible for all achievements". Abraham Maslow[7] remarks that 'creativity is the expression of ideas, receptivity to ideas, desire to grow as a man and actualizing one's potential'. Creativity as related to madness shows that the creative child thinks unthinkable and does undoable. The ordinary people prefer either imagination or practicality whereas the creative minded people choose both. Thus, the creative people are mad and mature as well.

The root of creativity is curiosity and its concrete results are part of productivity apparently visible in various faculties that later on promotes personality. The majority of investigation has been made in the field of personality as related to creativity.

Guilford[8] believes that creativity is divergent thinking ability involving sensitivity to problems, flexibility, fluency, originality and elaboration.

Creativity as defined by Baker (1962) "bringing about notable changes in things, thoughts, social structures through action, thinking which results in a situation not previously known to us".

Creativity "an ultimate human asset" (Toynbee 1969) needs to be identified, stimulated and nourished during childhood, if we are serious about developing fully functioning, mentally healthy, well-educated and vocationally successful individuals. Creativity deserves special attention keeping in mind its great contribution in various fields and faculties. The teachers of the nation must not neglect or under-estimate Creativity, even though the phenomenon of creativity is very complex and multy-dimensional. The investigator has thought it necessary to look into the components of creativity.

2.2 Components of Creativity

Some psychologists regard the phenomenon of creativity as a single dimension of personality. Guilford thinks that the creative disposition is made up of many components. Being a multi-dimensional aspect creativity can be measured by factor analysis on the basis of an aptitude project of Guilford[9] and his associates. The components of creativity can further be sub-divided into groups. This can be very well understood by the figure given below :

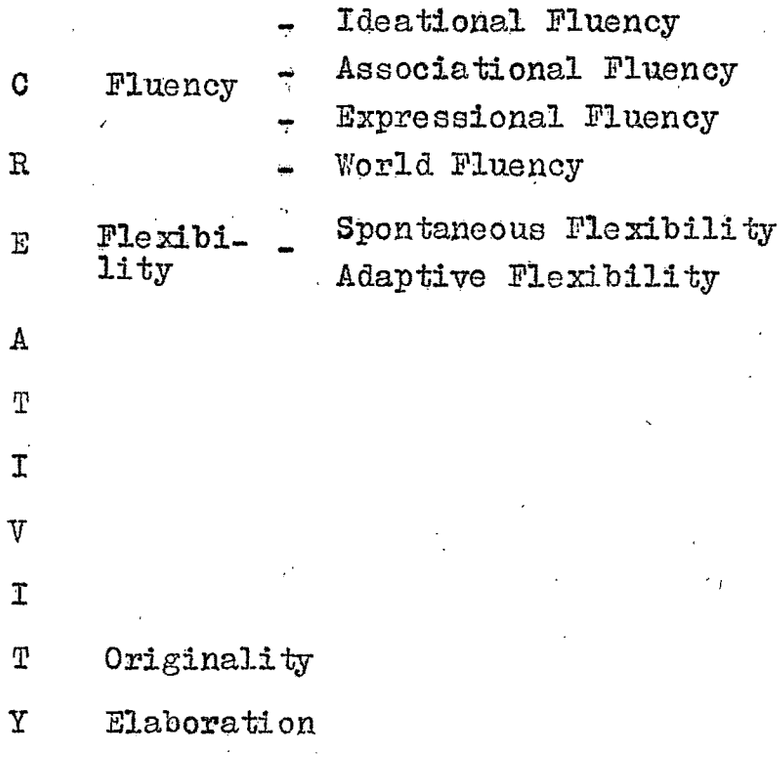

Figure 1 : Creativity : Its Components

The recent investigation on creativity factors by Chauhan and Tivari shows eight factors of creativity. From these eight components four are those which are mentioned by Guilford; the remaining components are listed below :

* Creative production
* Ingenious solution to problems (ISP)
* Sensitivity to problem
* Redefinition

Each of the components is explained below in detail.

(1) Fluency :

It refers to a rapid flow of ideas and tendencies to change directions and modify information. It is the quantitative representation of the units of products. It emphasizes the rate of production of all the units within all classes. Fluency is of four types :

(a) Ideational Fluency : It is the generation or production of ideas where free expression is encouraged and where quality is not evaluated.

(b) Expressional Fluency : It refers to the production of new ideas to fit a system or logical theories. This facilates construction of sentences.

(c) Associational Fluency : It indicates production of ideas or words from a restricted area with equal relationships.

(d) Word Fluency : It is the general of words of specifically required opithets. It is concerned only with words. It has been drawn by divergent production process. Using semantic contents to give a product of units in a table. Various tests to measure word fluency, use prefix, suffix or first or last letters of words.

(2) Flexibility

It is the readiness to change behaviour to meet changing circumstances. It represents a number of classes of objects or trains ideas produced. It indicates in how many distinct different ways an individual can respond to a stimulus. Flexibility is of two types :

(a) Spontaneous : It is the production of diversity of ideas in a relatively unrestricted situation.

(b) Adaptive Flexibility : It is some divergent transformation quality which involves changes.

(3) Originality

It refers to the unusua
unusual applications of parti
uncommonness or newness in the

(4). Elaboration

It ~~is~~ refers to the expand
of higher thought. It shows pro
variety of implications and conse
quantitatively measured.

(5) Creative Production

It refers to possessing both
creativeness. The semantic contents
thinking give units and figural conte
transformations.

(6) Ingenious Solution to Problems (

It is inventive. It is the right
many alternative ones.

(7) Sensitivity to Problems

It indicates the creativity for pro
creator sees defects, needs, deficiencies,

unusualities and sees what must be done. Whether the problem is simple or complex, he attacks it from various angles.

(8) Redefinition

It is closely related to flexibility and originality that arises from transformation, specially of convergent productions. It is ability to re-arrange ideas, concepts, people and things to shift the function of object and use them in new ways. It can be applied to different type of contents in the same way to figural symbolic, semantic etc., and they can be named with their names as figural redefinition, symbolic redefinition etc., thus it is evident that the concept of creativity component emerged from Guilford's divergent thinking technology. The components of creativity remain unique in their content-production. Their predominent mental operation is of the divergent type. Only the 'ISP' possesses convergent operation.

2.3 Creativity and 4-Ps

Psychologists view creativity from different dimensions. Hence it would be better to discuss, the term creativity from different angle i.e. from psychological traits of a person, process, press, and product.

2.3.1 Creativity and Press

Press means the instruction between human beings and their environment. It is the effect of environment that initiates the individual for certain creative activities. Maslow had been the exponent to define creativity on the basis of press. He explained self actualization, a pattern of personality growth - "Creativity involves a fundamental change in personality structure and that this chance occurs in the direction of fulfilment".[10] It implies motivated personality growth as sufficient ground for creativeness. Vinacke (1960) has aptly defined creativity "as an integrated harmony between external world of reality and individual's internalized needs".[11] Thus definitions emphasizing press clearly identify "openness to experience" as the main basis.

2.3.2 Creativity and Process

It was John Dewey[12] (1910), who first thought of creativity as a process. He emphasized only mental functioning and pointed out the following steps in typical problem solving.

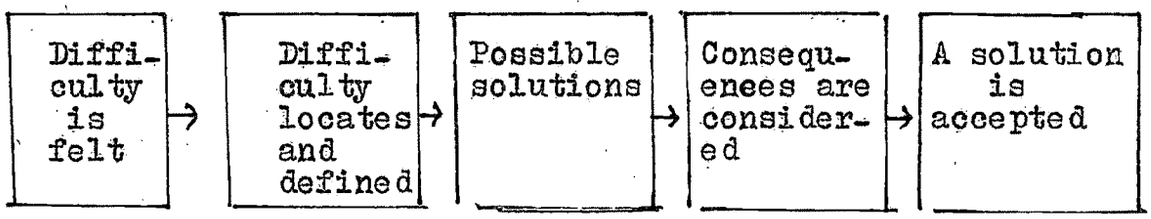

Figure - 2 : Dewey Model

After this model Graham Wallas[13] in 1926 suggested another model with four steps. According to Wallas the process of creativity is a mental functioning. The steps are as under :

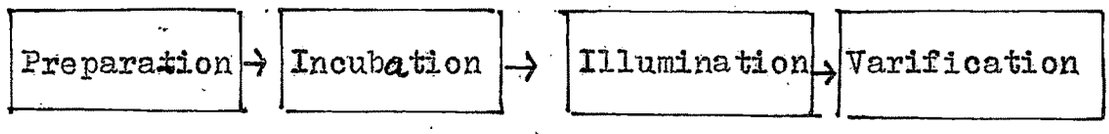

Figure - 3 Wallas Model

At that time Spearman supported Wallas and he thought of creation as purely a process (1930). For him creative thinking is the process of seeing or creating relationships with conscious or subconscious processes operating. But in 1931 Rossman[14] opposed their view. He suggested that the word 'Incubation' is not proper, because it shows the condition or a state of mind rather than a psychological operation. Hence he defined the process of creativity having several steps as follows :

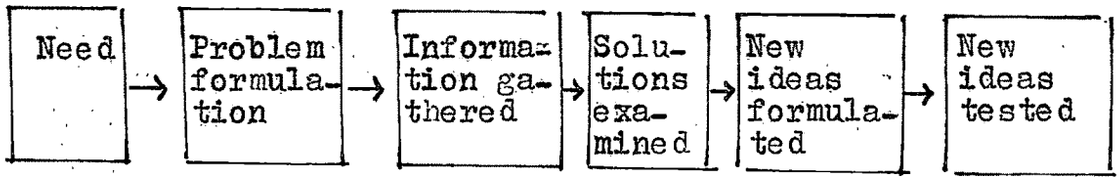

Figure - 4 Rossman Model

The creativity exponents like Guilford and Torrance also believed the creativity as a process. When Guilford[15] defined 'divergent thinking' as "the process of hypothesis forming, testing and result communication", his view became clear. On the basis of the definition of Torrance, Yamamoto[16] (1964) defined creativity as, "the process of forming new ideas or hypothesis, testing these ideas and communicating the results".

All these definitions lay stress only on the working within the psyche of the man or a creator.

2.3.3 Creativity and Product

During the third decade of century, it was thought that the product which the creative individual makes is the real measure. Greater the products, novel the products. They represent creativity. Adler (1927) defined creativity as "a compensatory product of the inferiority drive". In the fourth decade, creativity was defined as a product of distinctive drives and unconscious wishes that aspire

to become immortal (Sharp, 1930). The fifth decade psychologists, Wertheimer (1945) defined creativity as "productive thinking". Maslow (1962) has aptly remarked that "we tend to think of creativity in terms of product".

It seems that no definition is so pure to take into consideration of defining creativity only through product. There is always an overlap of other strands. Rogers (1961) who is supposed to prefer to define and consider creativity from the point of view of product has also taken a basis of 'press' in his definition of creativity. One cannot deny in saying that no attention has been paid to this aspect in India as well as in foreign countries.

Guilford (1950) in his presidential address to the American Psychological Association declared that creativity is one of the most neglected areas in psychology. His observation was based on his search of 1,21,000 articles on Psychology and Education and of which he could find only 186 articles related to imagination and creativity. Thus the field of creativity has been relatively neglected. Only a few efforts have been made to develop tests of creativity of Indian population - Chauhan and Tiwari (1970), Passi (1971), Parmesh (1971), Mehdi (1973), Gupta (1977), Hussain (1979) on the guidelines of Guilford, Torrance, Nunnlay, Wallach and Kogan's conceptual definitions of creativity.

2

Creativity being a complex and multidimensional aspect, could not fetch a single definition. Each thinker considers its different dimension. Hence a good number of definitions have been proposed by psychologists since this aspect attracted their attention. Creativity as defined by western researchers have different meanings but the one thing which is common in these meanings of creativity is originality.

To conclude, the term can be explained as a form of directed thinking in which the subject seeks to discover new relationship to achieve new solutions to problems, to invent methods or devices or to produce new artistic objects or forms. It is a basic striving of life to satisfy to creative motive and not a new product but an adequate challenge against the accepted old. It remains a many-splendoured phenomenon with uniqueness in approach and in expression of relationships, in solution of problems that are scientific, literary or artistic. It is a practical and independent capacity attempts to co-ordinate ideas, objects and techniques to get to the good. Creativity thus emerges as a 'hormic' urge and connation possessed of utilitarian novelty for ever perpetuating 'self-uplift', creativity is innovation, and invention and is the manifest of the dynamic 'latent'.

2.3.4 Creativity and Person

The psychologist, the clinician and the factor analyst have shown much interest in defining creativity in terms of traits. J.P. Guilford's[17] psychometric method has identified in the creative personality such traits as sensitivity to problems, fluency, flexibility, originality, ability to transform meaning and ability to elaborate. A.H. Maslow[18] believes that the healthy and self actualizing persons will be creative. And he adds that creative personality is spontaneous, expressive, effortless, innocent, unfrightened by the unknown or the ambiguous, able to accept tentativeness and uncertainty, able to tolerate bipolarity and able to integrate opposites.

Fromm[19] speaks of only four traits : Capacity to be puzzled, ability to concentrate, capacity to accept conflict and willingness to be reborn every day. Rogers[20] has a similar list : Openness to experience internal locus of evaluation and ability to toy with elements.

2.4 Theories of Creativity

After studying the meaning and concept of creative thinking, knowledge of the theories of creativity would throw more light on creativity. A brief views of the theories are explained below :

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2.4.1 Psycho-Analytical Theory

Frued is behind this theory. Frued[21] (1958) believed that sublimation of repressed unconscious wishes, pregenital and libidinal urges determine creativity. They totally do not accept it to be unconscious function since unconscious function is stereotype. Hadamard[22] (1945) gave importance to unconscious. He says when somebody speaks, the thoughts are conscious but language is unconscious.

Phillip (1957), Fenichel (1946) believed that neurotic trait may help person to be creative whereas Kube[23] (1958) rejected the thesis and stated that neuroces corrupt, mar, distort and block creativeness.

Psycho-analysts also believe that creativity is due to personal conflicts experienced specially in artistics experienced specially in artistic creations. Artist expresses his feelings through the piece of work and if appreciated by the audience, he gets satisfaction. G. Gortjohn (1957), Kins (1953), Adler[24] (1927) believed that a creative person must possess a third power besides two (genetic, heredity) and environmental, which help him in combining heredity and environment.

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2.4.2 Theory of Giftedness

Before divergent thinking, only the general mental ability was considered as a source of all human psychological functioning. Dewborn[25] (1898), Chassell[26] (1916), Andrew (1936) and Welch (1946) arrived at the conclusion that intelligence has a limited role and no power to explain the phenomenon of creation. Spearman[27] was the first exponent of the intellect theory of creative performance (1930). Spearman thought of creative thinking on the basis of a single factor of intelligence, called "g". Thurstone[28] (1952) also followed the Spearman model. He believed that the individuals who have greater contact with prefocal, unconscious phase of the act are creative. His theory was very near to psycho-analytical theory of creativity.

2.4.3 Mental Health Theory

It is reinterpretation of psycho-analytical ideas about creativity. Maslow[29] (1958) the great exponent of this theory took motivation as the basis of creation. Creation is removing barriers between conscious mind and preconscious area.

The creative process involves individuals ability to "regress in the service of ego", relieve material from

preconscious and return with it to the world of creativity. Self actualization - A person develops higher abilities at higher actualizing levels. A child who is satisfied with hunger and other social needs performs some cognitive activities.

2.4.4 Motivational Theory

A creative man is motivated to solve problems. Krop[30] (1969) found out that intrinsic and extrinsic motivations were associated to higher levels of creativity and higher proportions of creative responses. Alternativisum is also said to act behind creativity. Rossman (1931), Roe (1952) does not agree with the contention. He says creation is to improve things and not solely to help people. Hadamard (1945) says artists want to do something different. Guilford and others (1961) analysed several dimensions and could extract the reflective thinking, logical thinking, artistic thinking, convergent thinking, divergent thinking and tolerance for ambiguity. Marrified and others (1961) correlated the motivational factors to factors of creativity and found significantly positive correlations.

2.4.5 Transfer Theory

Many psychologists believe that creative production is problem solving. If both are similar we have advantage

of knowing what creativity is through the analysis of dimensions of problem solving. Dewey[31] (1910), Johnson (1955), Marrfied and others (1962) consider problem solving a creative manifestation.

2.4.6 Process Theory

Walls[32] (1926) gave a model of creative process and analysed the process into four stages : (a) preparation, (b) incubation, (c) illumination, (d) verification.

Guilford[33] (1964) has suggested a word "phrases or aspects" rather than stages. Miller and others (1960) suggested tone sequence (TOTE = Test, Operate, Test, Evaluate). Rossman give seven steps (1931) :

1. Observation of need or difficulty.
2. Analysis of the need.
3. Survey of all available information.
4. Formulation of objective solutions.
5. Critical analysis of solutions.
6. The birth of new idea.
7. Experimental to test out the idea.

2.4.7 Intellect Theory

This theory has a statistical and empharical basis. Guilford[34] (1956) believed that creativity is a group of

mental abilities that are covered by divergent thinking slab of the SI model. In this model three main aspects are given namely :

Process	Content	and Product
Divergent Product (P)	Figural (F)	Units (U)
	Symbol (S)	Class (C)
	Semantics (S)	Relation (R)
	Behavioural (B)	System (S)
		Transformation (F)
		Implications (I)

Figure - 5 Divergent thinking Intellectual Model of Guilford

The other four processes are cognition (C) memory (M) convergent Production (N) and evaluation (E).

2.4.8 Independent Theory

This theory has an anti-authoritarian notion of developing creativity. The compartmentalization, stereotyping and anti-interception of authoritarian personality prevents creative functioning.

Children should be saved from authoritarian parents and teachers to make them creative.

Foster (1958) explained that home environment, parental permissiveness Vs domination, mother domination, degree of

independence from parents, degree of divergence permitted, risk acceptance etc., are the factors fostering creative thinking ability. Torrance[35] (1953) opined that man fundamentally prefers to learn in creative way by exploring, manipulating, questioning, experimenting, risking, testing, and modifying ideas and otherwise enquiring.

If children are allowed to learn by themselves they learn creativity.

After studying the various theories, it can be said that no single theory explains all the causes of creative behaviour. Many theories will have to be combined to understand the causes of creative behaviour or manifestations of creativity.

2.4.9 Serendipity Theory

This theory is old but the idea is modern. It thought on creative production. They attribute creativity to accidentality in most of the creations, whether they be scientific or artistic.

Galvani discovering electric effects in living tissue, orested discovering the relation between electricity and magnetism. Claude Bernard discovering the nervous control of blood circulation and Pavlov discovering the conditioned response, made all accidental creation. This theory also

believes that it may not be new production, but reinterpretation or new interpretation to already existing thing can also be produced serendipitily. This theory does not provide sound scientific basis of explanation.

2.4.10 Associative Theory

This theory of creative is based on S-R associations and is purely an american origin. The experiments of this theory took Wilson's definition of originality and tried to find it out in associations. Wilsons and others (1954) defined 'originality' as statistical infrequencies of responses with weighted scoring found on free association test. Maltzman hypothesized that by giving uncommon responses which is one of the criteria of originality is a habit that can be strengthened by the usual procedure of operant learning. He also found transfer effects from unusual uses test to Word-Association Test.Larger the training test larger was improvement.

Maltzman indicated that every associative response is associated with every other associative response. Thus Ss would give remotely associative responses. He also hypothesized that the associations are stronger between pairs of uncommon associates than between an uncommon and a common responses. In Maltzman's originality uncommon associations are reinforced. The reinforcement, when no reward is given. There is transfer of reinforcement to other uncommon responses. Common responses are not reinforced, which presumably build

up a resistance against giving common responses, which transfer to other common responses. This thinking is like that of transfer theory. Hyman[36] (1960) rejects the associative theory of Maltzman.

The great exponent of this theory is Mednick. He suggested that creative solutions are achieved in three ways. Mednick developed the Remote Associates Test. The association theory has its value in considering creativity, but its scientific value is yet questionable. Guilford (1960-1961) believed that to become a good theory it must extend itself beyond the association principle and all the psychological products must be used. They suggested either the test measures extent rather than slope of hierarchy or the slope of the individual's hierarchy is not a general trait but depends upon particular stimulus context. It is also felt that there is no direct control of intelligence which is related to RAT as found by Mednic (1983) in the association.

2.4.11 Cognitive Theory

How do creative people perceive and think about things and events? This theory answers this question from the point of view of cognitive styles which most effectively lead to the detection of novel information, Witkin and his associates (1954) distinguished two modes of perception. Gardner and his associates (1959) taking from Piaget's notion of

perceptual centration and decentration. They believed that there are individual differences in decentering attention- some scan broadly, others narrowly. One of the tests to measure field independence is Rod and Frame Test. Every movement, number of separate centrations etc., have also been found related to this ability revised a doubt with respect to these ideas that it is not clear how focusing attention involved in analytic perception and is related to creativity but agreed that flexibility is related to creativity, seems plausible, and attention described by Gardner may be related to creative thinking. Haronian and Suzerman (1967) maintain that field dependence characterize the person in rigidity and prevents change in one's attitude in response. Bloomberg[37] (1971) said that flexibility is related to intelligence and not to creativity. Like other theories of creativity, this theory also reports only a limited view of creativity.

2.4.12 Personality Trait Theory

This theory takes into consideration a great pile of human personality traits that are specifically found most in creative individuals. Hargreaves[38] (1927) himself recognized conative factor in imagination. Guilford finds relationship between creativity and temperament. In fact this theory came out of various empirical studies of personality of creative persons in various fields. Study taken on artists, scientists, writers and architects. Most of these studies used various

sources, like personality and temperament questionnaires, TAT, personal data, rating etc., and showed a good number of characteristics. Weisberg and Torrance studied on creative children and Getzels and Jackson studied on creative adolescents.

Trait theory, though very important, is not by itself a complete picturesque of a sound model. From the literature it appears that specific creativity is more related to specific traits.

2.5 Correlates of Creativity

From the findings of the various studies, it is found that creativity is co-related with personality, age, sex, socio-economic status, birth-order, academic achievement and intelligence. Here the investigator has focussed on (i) creativity and personality (2) creativity and sex ....

2.5.1 Creativity and Personality

Knowledge of creativity is useful to develop a personality in various fields. Very few researches have been done on creativity and personality. The first investigation on the problem of creativity personality relationship is made by Gotton (1869). In the year (1959), Drevdahl conducted a study in this field and concluded that creative artists are more radical and self-sufficient than creative scientists. Raina M.K.[39] (1968) compared high creative and low creative

studies on the measure of cognition, personality and socio-economic status and found significant differences. Souksmith (1970) found that creativity and personality traits have definite relationship.

Personality of a Creative Infant

Those who sought to study creativity in infants sought to find it through the medium of art. Grippens (1933) work on 3-7 years children made it clear that experimental imagery is important, and in infants these images are revised to organise and recognize the structures. But these studies do not throw proper light on the issue. However, knowledge of such characteristics may be of vital use in understanding creativity and personality traits in relation to it in understanding children and adults.

Personality of a Child

The creative power in school going children have been abundant. In Torrance study (1959) three personality characteristics of creative children were prominent. Openness to experience and independence have been found important factors for creativity in children. Studying throughly to latency age children, it has been found that creativity and personality traits have definite relationships. These studies throw very important light on the significant personality characteristics of creative children.

Personality of a Creative Adult

Torrance (1961) and others found adults of creative attitude having urge to search for answers to puzzling questions to explore and to experiment. They are also inclined to search for defects and criticism. They are confined of their perceptions.

These studies of creative adult students provide some better grounds in understanding the important traits than what children and adolescent studies had been. Later studies also indicate a creative adult to discern more complexity than others possess more perceptual openness, resist premature judgement, depend on institution and seem to be motivated, more independent and dominant.

General Notes

In this study life history, hobby, reading I.Q. habits ... etc., are studied and try to understand the reason of development of a particular Scientist/Artist/Engineer/ Doctor$/Cricketer$/Writer$..

In a few studies strong positive relationship between creativity and self concept have been observed. Parmesh (1970) found that the creative individuals were possessing the high aesthetic values and low economic values. A few studies have reported that creative people are not normal in the psychological sense, but this viewpoint cannot be

generalized. Creative people are independent in thought and action. They possess a high degree of self confidence. About sensivity creatives possess a high sensitivity to problems. Creatives are less sociable than non-creatives. Risk-taking is one of the important traits of creative personality. Autonomy has been observed as one of the main characteristics of creative person. It may be said that creatives are less tensed as compared to non-creatives. In the creative person high motivation persistency, self sufficiency, self-actualization open-mindedness less agreeability self expression, high ego strength, curiosity, self discipline, trust, security, easy goingness, realism, self-control are observed.

2.5.2 Creativity and Sex

With respect to this area of creativity research, 127 studies conducted in different culture with samples drawn from children of pre-school to much older people, and utilizing the different criteria and instruments to evaluate creativity have been reviewed under three heads namely :

1. Superiority of males over females
2. Superiority of females over males
3. No significant sex differences in creativity.

(1) Superiority of Females over Males

There are a number of verbal and non-verbal creative study has been reported. The investigator observed that the females are more contents of imagination than males. Females were also observed to be significantly higher than males in originality aspect of creativity. Mac Coby and Jaction (1975) also concluded from their exhaustive review on sex differences in creativity that at least from age of 7 onwards females are superior to males in verbal creativity. A few studies conducted in India have also shown a significant superiority of females over males in different aspects of creativity.

(2) Superiority of Males over Females

The superiority of males over their female counterparts in different aspects of verbal and non-verbal creativity has been reported by a number of researchers, some have demonstrated a significantly higher score for males in one aspect of creativity, whereas, some others have shown the similar trend with respect to some other aspect of creativity. Considering the creative contributions of males and females in the history of the development of civilization, Cattell (1903), could find only 32 females out of 1000 prominent persons. Ellis (1904), in a study of British Geniuses found only 55 females in a list of 1030 highly eminent persons. Similarly Castle (1913) could identify only 868 famous women

who have done some creative contributions drawn through the ages. All of these instances show that females have offered comparatively less creative contributions to the history of development of civilization than males.

(3) No Significant Sex Difference in Creativity

There are many studies conducted in different cultures that do not show the significant differences in the performance of male and female subjects on different aspects of verbal and non-verbal creativity. The sample in these studies have ranged from elementary school children to the much older people, although concentrating mostly upon school children. Using the Passi tests of creativity and the verbal and figural creativity tests by Torrance,[5] the investigator observed that there were no differences in the performance of male and female students on any of the creativity tests in India as well as in Thailand.

The above discussion on the effect of sex on creative thinking abilities of subjects, makes it clear that it is not possible to state the trend of sex differences in creativity, clearly. Many factors are likely to affect the findings of any pertaining to the effect of sex on creativity. Hence, the investigators should keep these factors in mind while generalizing the findings of any study on this aspect of creativity, and future investigations may be carried out with

the hypothesis that "there exist no sex differences in creativity".

2.5.3 Creativity and Socio-Economic Status (SES)

The effect of socio-economic status of subjects, which is indicated through their family background, education of parents, position or fame and honour held by the parents or others at home, in community and neighbourhood, the social and intellectual bases in the family, professional background, the number of siblings and size of the family, and the level of vocational independence of the parents etc., on their creative thinking abilities has been investigated in a number of studies. A majority of these studies have observed that there exists a positive and significant relationship between SES of the subjects and their creative thinking abilities and the subjects belonging to the parents having high SES are significantly more creative than the subjects belonging to the parents having low SES.

Apart from these studies, there are a few evidences where the investigators have observed the superiority of high SES subjects over those of low SES in some aspects of creativity. In this study the researchers observed that the subjects belonging to the parents having average SES

were significantly more creative than those subjects who belonged to the parents having low SES. Ogletree and Wilma (1973) said that in all countries subjects of upper SES class families obtained significant higher creativity score more than the children from middle and lower SES backgrounds.

There are few studies where the investigators did not find any significant difference in the creative thinking abilities of the subjects belonging to different SES backgrounds. Yet it may be treated as a hypothesis that "socio-economic status has a positive relationship with creativity of the subjects".

2.5.4 Creativity and Birth Order

Among the host of factors that determine the creative achievements of an individual, his birth order also seems to be an important factor.

Rode (1952, 53) conducted his studies with eminent social and natural scientists and observed that first born had the more chances to contribute creatively than those of the other brothers. Baranowski (1971) noted that first born males were more creative and tend to prefer complexity than later borns. Lunneborg (1968) suggested that first borns were superior verbally as well as quantitatively as

compared to later borns. Vasantha (1978), also carried out a study with the students who had qualified the Science Talent Search Tests of the NCERT, and found that the students of first and second birth orders were significantly superior to the students of other birth orders on the tests of creative thinking.

It may be concluded from this study that the subjects of earlier birth orders have more creative potential than those of later birth orders.

Contrary to these findings, Bill (1970) reported that creatives were more among later borns. In this study, the creative achievements of 64 eminent writers and poets were studied, whereas Datta Jawa Srivastava and Badrinath and Satyanarayanan reported that birth order of the subjects had no significant effect on their creative achievements.

Thus we can say that first born subjects have comparatively more chances to contribute creativity than the subjects of later birth orders.

2.6 Creativity and Education

The most significant contribution in the field of cognative ability had been that of creativity. Children are creative by nature for they have the innate ability to

see new relationships and produce new combination resulting in process. They reveal this tendency in speaking, working as well playing. But it is sad to note that in the long run they lose this ability due to lack of proper guidance of teachers as well the parents to whom they are concerned with. As we all know that education aims at the natural, harmonious and progressive development of an individual and this cannot be attained unless we pay proper attention along with other aspects to the creative aspect of the individual considering appropriate seeds as well as soil and climate for the development of creative production. Today we see that our school programmes are not giving due place to the educational experiences and proper environment which are conductive to the development of creative potential. Our unawareness of creative talent in relation to national development of inadequate understanding of the creative process on the part of teachers or lack of knowledge of factors which inhibit and accelerate the development of creativity, probably might be the cause of the same. Similar views have been expressed by Vernon as "The present system is criticised for favouring the conformists mentality - the pupil or student who is good at accepting the learning what his teachers and lecturers tell him and thinking and writing along conventional lines whereas it discourages spontaneous and independent thinking.

One cannot deny in saying that our educational planners must recognize the creative talents because creativity is "One of the high values of human characteristics and our present educational structure is hampering this development as pointed out by Gatzels and Jackson (1962) "..... There are indications that our whole educational structure is unable to assess creativity but actually is based against. Most teachers do not care much for the unusual 'off-beat' child who gives answers that do not confirm to some pre-determined idea of what is correct.

The goal of education is to develop capabilities, personal expressions, inventiveness and gifted leadership. This cannot be fully attained without the adequate and accurate knowledge of creativity. The creative thinking abilities contribute significantly to the acquisition of information and various educational skills.

Torrance (1962) realized the importance of guiding the growth of creative thinking abilities in children for ensuring their mental health, fully functioning personalities, educational achievement, vocational success, social importance and for providing different guidance roles. As in the studies of Roe Ann (1960), Sen Gupta, M. (1976-1977) it was found that the creative people of scientific and engineering pursuits are inclined towards higher autonomy

in actions and decisions and are more persistent in efforts, curiosity in term remains strong and do possess high intelligence.

From the above research finding it is evident that the conditions for creative productions will have to be carefully planned, if we want more creative act to be demonstrated creativity needs appropriate seeds as well as soil and climate for its development and fruition. Creativity can be enriched if the dogmatic authoritarian restrictive and pedantic influences are removed from our educational institutions.

Keeping in view these considerations there is need to tailor the educational system. The aims of education, curriculum, method of teaching promotion and rewards should be modelled according to the needs of the pupils as well as the teachers. As the needs of the creatives are quite different from the non-creatives, the educational policy should be reframed with the provision of differential promotions, provision of special classes, enriched and diversified curriculum individualised instructions. For teaching, the heuristic approach, problem solving project method and scientific enquiry, techniques should be adopted keeping in view the individual differences between children do possess the seeds of creativeness but the climate for its germination are absent and this we can overcome by playing

more and some emphasis in our educational structure.

2.7 Creativity and Present Study

Without doubt it can be stated that specific environment should be conductive for development of creative potentials. The individual after birth throughout his age receives all experiences of the environment and from the environment; his curiosity helps him to gain knowledge; his memory helps him to retain that knowledge; and his potentials help him to utilize the gained knowledge. The various environments through which the infant, child or adult passes have indelible impression upon developing his abilities and knowledge. The environmental influences, direct or indirect, have a great role in developing creative abilities too.

As home is starting point in the life of an individual, various factors of home influence development of creativity in infants and children. The various factors of in-home behavioural environment, child rearing, the socio-economic condition of home, size of family etc., determine the coggeniality or non-congeniality for creative growth. Another environment imparting great influence upon the child is school where he spends considerable time of his life. In school he enters into a competitive environment from protective environment of home. The type of

school in which the individual receives the training is said to influence creativity. The degree of intellectual environment of the school directly affect the level of growth of child's creativity.

The present study had been undertaken to study the level of creativity of the primary school children and to observe the trends of creativity in relation to the factors regarding the home and school environment.

This review chapter throws some lights on the conceptual understanding of creativity and on the review work to be made for the study.

References

1. R.J. Hallman, The Necessary and Sufficient Conditions of Creativity (Eds.) Gowan, Demos & Torrance, Creativity Its Educational Implications, (N.Y. : John Wiley and Sons, 1967), p. 19.

2. H.A. Simon, Understanding Creativity.

3. J.W. Gatzels and P.W. Jackson. Creativity and Intelligence. N.Y. : John Wiley and Sons., 1962.

4. S.A. Mednic. The Associative Basis of the Creative Process. Psychological Review, 1962, 69, 220-232.

5. Arnold Toynbee (1964). Is American Neglecting Her Creative Minority? In C.W. Tayor (Ed.), Widening Horizons in Creativity. New York : Wiley, 1964.

6. E.P. Torrance. Nature of Creative Talent (Ed.) G.A. Davis and J.A. Scott, Training Creative Thinking. Holt, Rinehart and Winston, Inc., USA, 1971. pp. 210-211.

7. A.H. Maslow. Emotional Books to Creativity. Journal of Individual Psychology, 1958, 14, 51-56.

8. J.P. Guilford. The Nature of Human Intelligence, (New York : McGraw Hill, 1967).

9. Ibid.

10. K. Yamamoto. Role of Creative Thinking and Intelligence in High School Achievement. Psycho. Report, 1964, 14, 783-789.

11. Vinacke (1960). As Cited by G. Tiwari and R. Pal. Status of Indian Researches in Creativity. (Agra : Psychological Research Cell, Agra-4, 1983), p. 3.

12. John Dewey. How We Think. D.C. Heath and Co., 1910.

13. G. Wallas. The Art of Thought. N.Y. Harcourt Brace, 1926.

14. J. Rossman. The Psychology of the Inventor. Washington, D.C.; Inventors Publishing Co., 1931.

15. J.P. Guilford As Cited by K.N. Sharma. Dynamics of Creativity (Agra : National Psychological Corporation, 1979), p. 5.

16. K. Yamamoto. Creative Thinking. Some Thoughts on Research. Exceptional Children, 1964(b), 30, 403-410.

17. J.P. Guilford. A Psychometric Approach to Creativity, Mimeographed, University of Southern California, March, 1962.

18. A.H. Maslow. Creativity in Self, Actualizing People, in Creativity and its Cultivations. pp. 83-95.

19. E. Fromm. The Creative Attitude. In H.H. Anderson's Creativity and Its Cultivation. N.Y. Harper and Row, 1959, 44-54.

20. C.R. Rogers. On Becoming a Person. Boston : Houghton Mifflin, 1961.

21. S. Freud. On Creativity and Unconscious. N.Y. Harper, 1958.

22. J.S. Hadamard. An Essay on the Psychology of Invention in the Mathematical Field. Princeton, N.J. Princeton University Press, 1945.

23. L.S. Kubie. Neurotic Distortion in the Creative Process. Kansas, University of Kansas Press, 1958.

24. A. Adler. The Practice and Theory of Individual Psychology. N.Y. Harcourt Brace. 1927.

25. G.V. Dearborn. A Study of Investigation. American Journal of Psychology, 1898, 5, 9, 183-190.

26. L.M. Chassell. Test of Originality. Journal of Education Psychology, 1916, 7, 317-328.

27. C. Spearman. Creative Mind. London : Cambridge University Press, 1930.

28. L.L. Thurstone. Creativity Talent. In L.L. Thurstone's (Ed.) Applications of Psychology. N.Y. Harper & Bros. 1952. 18-37.

29. A.H. Maslow. op. cit., pp. 51-56.

30. Harry, Krop. Effects of Extrinsic Motivation, Intrinsic Motivation and Intelligence on Creativity : a Factorial Approach. Journal of General Psychology, 1969, 80, 259-266.

31. John Dewey. op. cit.,

32. G. Walls. The Art of Though. N.Y. Harcourt Brace, 1926.

33. J.P. Guilford. Some Theoretical Views of Creativity. In H. Helson and W. Bevan's (Ed.) Contemporary Approaches to Psychology. N.Y. Van Nostrand, 1964.

34. J.P. Guilford. Structure of Intellect. Psychological Bulletin. 1956, 53, 267-293.

35. E.P. Torrance. Towards the More Humance Education of Gifted Children. Gifted Child Quarterly, 1963, 7, 135-145.

9

36. M. Hyman. Some Experiments on Creativity. N.Y. General Electric Relations Services, 1960.

37. M. Bloomberg. Creativity as Related to Field-Independence and Motility. Journal of Genetic Psychology, 1971, 118, 3-12.

38. H.L. Hargreaves. The Faculty of Imagination : an Enquiry Concerning the Existence of a General Faculty or Group Factor of Imagination. British Journal of Psychological Monograph. Supplement No. (3), 10, 1927.

39. M.K. Raina. A Study of some Correlates of Creativity in Indian Students. Doctoral Dissertation, University of Rajasthan, 1968.